IN THE CLAIMS

The following listing of the claims is provided in accordance with 37 C.F.R. §1.121:

1. (original) A radiation detector assembly comprising:

a detector substrate;

a detector matrix array disposed on said detector substrate;

a scintillator material disposed on said detector matrix array;

a moisture resistant layer disposed on said scintillator material, said moisture resistant layer comprising a plurality of sub-layers,

a protective cover disposed over said detector substrate and said moisture resistant layer; and

an adhesive material disposed between said detector substrate and said cover;

wherein said adhesive material is disposed so that it is not in contact with said moisture resistant layer.

2. (original) A detector assembly in accordance with Claim 1, wherein said moisture resistant layer further comprises an encapsulating coating disposed on said scintillator material and a reflective sub-layer disposed on said encapsulating coating.

3. (original) A detector assembly in accordance with Claim 2, wherein said moisture resistant layer further comprising one or more moisture resistant sub-layers disposed on said reflective layer, said one or more moisture resistant sub-layers being substantially transparent to a radiation to be detected by said detector assembly.

4. (original) A detector assembly in accordance with Claim 3, wherein said plurality of sub-layers are selected from a group consisting of titanium, aluminum, nickel, a polymer comprising one or more types of substituted or unsubstituted para-

xylylene materials, magnesium fluoride (MgF_2), silicon oxide (SiO), aluminum fluoride (AlF_3), silicon dioxide (SiO_2), titanium dioxide (TiO_2), a silicone potting compound and combinations thereof.

5. (original) A detector assembly in accordance with Claim 2, wherein said encapsulating coating comprises a material selected from a group consisting of magnesium fluoride (MgF_2), silicon oxide (SiO), aluminum fluoride (AlF_3), titanium dioxide (TiO_2), silicon dioxide (SiO_2), a polymer comprising one or more layers of substituted or unsubstituted para-xylylene materials, and combinations thereof.

6. (original) A detector assembly in accordance with Claim 2, wherein said reflective layer is selected from a group consisting of silver, gold, aluminum, a polyester film with a layer of pressure sensitive adhesive, and combinations thereof.

7. (original) A detector assembly in accordance with Claim 1 wherein said protective cover comprises graphite.

8. (original) A detector assembly in accordance with Claim 1 wherein said protective cover comprises plastic.

9. (original) An X-ray detector assembly comprising:

a detector substrate;

a detector matrix array disposed on said detector substrate;

an X-ray scintillator material disposed on said detector matrix array;

a moisture resistant layer disposed on said scintillator material, said moisture resistant layer comprising a plurality of sub-layers,

a protective cover disposed over said detector substrate and said moisture resistant layer; and

an adhesive material disposed between said detector substrate and said cover;

wherein said adhesive material is disposed so that it is not in contact with said moisture resistant layer.

10. (original) An X-ray detector assembly in accordance with Claim 9 wherein said moisture resistant layer further comprises an encapsulating coating layer disposed on said scintillator material and a reflective sub-layer disposed on said encapsulating coating layer.

11. (original) An X-ray detector assembly in accordance with Claim 10 said moisture resistant layer further comprising one or more moisture resistant sub-layers disposed on said reflective layer, said one or more moisture resistant sub-layers being substantially transparent to X-rays.

12. (original) An X-ray detector assembly in accordance with Claim 9 wherein said protective cover comprises graphite.

13. (original) An X-ray detector assembly in accordance with Claim 9 wherein said protective cover comprises plastic.

14. (original) An X-ray detector assembly in accordance with Claim 9 wherein said X-ray scintillator is selected from the list consisting of cesium iodide (CsI) CsI(Tl), CsI(Na), NaI(Tl), LiI(Eu), and combinations thereof.

15. (original) An X-ray detector assembly in accordance with Claim 9 wherein said X-ray scintillator comprises cesium iodide (CsI) needles.

16. (original) A radiation detector assembly comprising:

a detector substrate;

a detector matrix array disposed on said detector substrate;

a contact finger area disposed on said detector substrate and in electrical communication with said detector matrix array;

a scintillator material disposed on said detector matrix array;

a moisture resistant layer disposed on said scintillator material, said moisture resistant layer comprising a plurality of sub-layers; and

a protective cover disposed over said detector substrate and said moisture resistant layer;

wherein said protective cover is bonded to said moisture resistant layer using an adhesive material; and

wherein said moisture resistant layer is disposed so that an edge portion of said moisture resistant layer is bonded to said detector substrate between said adhesive material and said contact finger area.

17. (original) A radiation detector assembly in accordance with Claim 16, wherein said moisture resistant layer further comprises an encapsulating coating layer disposed on said scintillator material and a reflective sub-layer disposed on said encapsulating coating layer.

18. (original) A radiation detector assembly in accordance with Claim 17, wherein said plurality of sub-layers are selected from a group consisting of titanium, aluminum, nickel, a polymer comprising one or more types of substituted or unsubstituted para-xylylene materials, magnesium fluoride (MgF_2), silicon oxide (SiO), aluminum fluoride (AlF_3), silicon dioxide (SiO_2), titanium dioxide (TiO_2), a silicone potting compound, and combinations thereof.

19. (original) A radiation detector assembly in accordance with Claim 17, wherein said moisture resistant layer further comprises one or more moisture resistant sub-layers disposed on said reflective layer, said one or more moisture resistant sub-layers being substantially transparent to X-rays.

20. (original) A radiation detector assembly in accordance with Claim 17, wherein said encapsulating coating layer is selected from a group consisting of magnesium fluoride (MgF_2), silicon oxide (SiO), aluminum fluoride (AlF_3), Titanium dioxide (TiO_2), silicon dioxide (SiO_2), a polymer comprising one or more tiers of substituted or unsubstituted para-xylylene materials, and combinations thereof.

21. (original) A radiation detector assembly as in claim 17, wherein said reflective layer is selected from a group consisting of silver, gold, aluminum, a polyester film with a layer of pressure sensitive adhesive, and combinations thereof.

22. (original) A detector assembly in accordance with Claim 16 wherein said protective cover comprises graphite.

23. (original) A detector assembly in accordance with Claim 16 wherein said protective cover comprises plastic.

24. (original) An X-ray detector assembly comprising:

a detector substrate;

a detector matrix array disposed on said detector substrate;

a contact finger area disposed on said detector substrate and in electrical communication with said detector matrix array;

an X-ray scintillator material disposed on said detector matrix array;

a moisture resistant layer disposed on said scintillator material, said moisture resistant layer comprising a plurality of sub-layers; and

a protective cover disposed over said detector substrate and said moisture resistant layer;

wherein said protective cover is bonded to said moisture resistant layer using an adhesive material; and

wherein said moisture resistant layer is disposed so that an edge portion of said moisture resistant layer is bonded to said detector substrate between said adhesive material and said contact finger area.

25. (original) An X-ray detector assembly in accordance with Claim 24 wherein said moisture resistant layer further comprises an encapsulating coating layer disposed on said scintillator material and a reflective sub-layer disposed on said encapsulating coating layer.

26. (original) An X-ray detector assembly in accordance with Claim 25 said moisture resistant layer further comprising one or more moisture resistant sub-layers disposed on said reflective layer, said one or more moisture resistant sub-layers being substantially transparent to X-rays.

27. (original) An X-ray detector assembly in accordance with Claim 24 wherein said protective cover comprises graphite.

28. (original) An X-ray detector assembly in accordance with Claim 24 wherein said protective cover comprises plastic.

29. (original) An X-ray detector assembly in accordance with Claim 24 wherein said X-ray scintillator material is selected from the list consisting of cesium iodide (CsI) CsI(Tl), CsI(Na), NaI(Tl), LiI(Eu), and combinations thereof.

30. (original) An X-ray detector assembly in accordance with Claim 24 wherein said X-ray scintillator material comprises cesium iodide (CsI) needles.